

After a status word has been changed to CANCELED, the control computer 150 causes a message to be sent to the host computer that the prescription has been canceled, and then sets the status word in the corresponding script buffer register to READY so that the host computer can send another script to be stored in the script buffer register. 5

As indicated above, a step of the above described process illustrated in FIGS. 17a through 17d is performed for each of the five scripts in the script buffer registers each time the program iterates through the operator station routine 321. Each script buffer register may have a different status word and, accordingly, the program will perform different steps of the dispensing process for each script in the script buffer register. Thus, while the label for one script is being printed, the pills for other scripts may be in the process of being counted, being dumped from the upper hopper to the lower hopper, or be waiting in the lower hopper for their scripts turn to have a label printed. In this manner, the dispensing operation for up to five prescriptions can be processed simultaneously. However, only one printer is provided so each script must wait its turn for printing a label. To reduce the chances of error, a new label will not be printed until the filled prescription of the previous label has been deposited in the chute. Accordingly, the last part of the dispensing process from printing the label to detecting the filled prescription vial in the chute is performed for only one script at a time. 10 15 20 25

It will be apparent to those skilled in the art and it is contemplated that variations and/or changes in the embodiments illustrated and described herein maybe made without departure from the present invention. Accordingly, it is intended that the foregoing description is illustrative only, not limiting, and that the true spirit and scope of the present invention will be determined by the appended claims. 30

We claim:

1. An automated prescription dispensing system comprising a plurality of adjacently arranged pill dispensers, each operable to count out and dispense pills of a different pharmaceutical, computer control means to store a plurality of prescriptions each specifying a different pharmaceutical in pill form and a number of pills, said computer control means selecting the pill dispensers dispensing the pharmaceuticals specified in said stored prescriptions and controlling the selected pill dispensers to simultaneously count out and dispense pills, said computer control means stopping each pill dispenser from counting out and dispensing pills when the number of pills specified in the corresponding prescription have been counted out and dispensed, a plurality of upper hoppers, one for each of said pill dispensers, positioned to receive pills counted out and dispensed by said pill dispensers, a plurality of lower hoppers one for each of said upper hoppers, said computer control means releasing pills from an upper hopper into the corresponding lower hoppers after the pills of a prescription have been dispensed into such upper hopper, said computer means selectively permitting the release of pills from said lower hoppers into prescription containers. 35 40 45 50 55

2. An article dispensing system comprising:

a supply hopper for a plurality of articles to be dispensed;
a first buffer chamber having an outlet and an outlet door;
means for counting and advancing articles from the supply hopper to said first buffer chamber;
first means for moving said outlet door to release the articles from said first buffer chamber in response to a first predetermined condition;
a second buffer chamber for receiving articles from said first buffer chamber, said second buffer chamber having an outlet and an outlet door; and 60 65

004220 "HEZEL" 022400

second means for moving said door of said second buffer chamber to release the articles from said second buffer chamber in response to a second predetermined condition.

5 3. The article dispensing system of claim 2, wherein said second means will not move the outlet door of said second buffer chamber to release the articles from said second buffer chamber until after verification by machine reading of a bar-coded prescription on a receptacle for receiving the articles.

10 4. The article dispensing system of claim 2, wherein said second means comprises means for moving said outlet door of said second buffer chamber to release the articles from said second buffer chamber in response to the presence of a receptacle at an outlet snout.

15 5. The article dispensing system of claim 2, further comprising a cabinet having a rear wall, wherein said supply hopper is positioned inside said cabinet, said rear wall has an opening for providing access to said supply hopper, the article dispensing system further comprising a security door
20 movably mounted on said rear wall, said security door being movable between a first position, in which said security door covers said opening, and a second position, in which said security door uncovers said opening, and locking means for preventing movement of said door from its first position.

25 6. The article dispensing system of claim 5, further comprising means for disabling said locking means, so that said security door can be moved out of said first position.

7. The article dispensing system of claim 6, wherein said actuating disabling means comprises a bar code reader.

30 8. An article dispensing system comprising:
a plurality of article dispensing subsystems each including a supply hopper for a plurality of articles to be dispensed;
a first buffer chamber having an outlet and an outlet door;
means for counting and advancing articles from the
35 supply hopper to said first buffer chamber;
first means for moving said outlet door to release the articles from said first buffer chamber in response to a first predetermined condition;
a second buffer chamber for receiving articles from said
40 first buffer chamber, said second buffer chamber having an outlet and an outlet door; and
second means for moving said door of said second buffer chamber to release the articles from said second buffer chamber in response to a second predetermined condition.
45

9. The article dispensing system of claim 8, wherein each of a plurality of the article dispensing subsystems contains pills different from pills contained by other article dispensing subsystems, and the article dispensing system further
50 comprises means for actuating the article counting and advancing means of one of the subsystems in response to a prescription, means for printing a corresponding bar-coded prescription label, and means for indicating the location of a container suitable to hold the prescription.

55 10. The article dispensing system of claim 9, further comprising machine means for reading the bar-coded label and wherein said second means will not move the door of said second buffer chamber to release the pills until after verification by reading of the bar-coded label by the reading
60 means.

11. The article dispensing system of claim 10, wherein each of the article dispensing systems includes an outlet snout through which the pills are dispensed to a receptacle, and an indicator associated with each snout, the article
65 dispensing system further comprising means for actuating the indicator of the snout through which the pills are to be dispensed.

004230 "HET 50"

18. An automated prescription dispensing system as recited in claim 16, wherein signalling means are provided

for each of said pill dispensers to call an operator's attention to such pill dispenser when such indicating means is activated, said computer control means being responsive to said stored prescriptions to select and activate one of said
5 indicating means.

19. An automated prescription dispensing system comprising a plurality of adjacently arranged pill dispensers, each operable to count out and dispense pills of a different pharmaceutical, computer control means to store a plurality
10 of prescriptions each specifying a different pharmaceutical in pill form and a number of pills, each computer control means selecting the pill dispensers dispensing the pharmaceuticals specified in said stored prescriptions and controlling the selected pill dispensers to simultaneously count out
15 and dispense pills, said computer control means stopping each pill dispenser from counting out and dispensing pills when the number of pills specified in the corresponding prescription have been counted out and dispensed, a plurality of output hoppers one for each of said pill dispensers to
20 receive the pills counted out and dispensed by said pill dispensers, output snouts, one connected to each of said output hoppers, said computer control means including means to selectively permit the release of the pills from said output hoppers through the corresponding output snouts,
25 said output snouts being arranged in at least one row and defining an aisle extending adjacent to and parallel to said row to permit an operator to have ease of access to pills dispensed through said snouts.

20. An article dispensing system comprising a plurality of
30 adjacently arranged article dispensing subsystems each including a supply hopper for a plurality of articles to be dispensed, means for counting out and dispensing articles from a selected supply hopper, said system including a cabinet having a rear wall and a front side wall wherein the
35 supply hoppers are positioned inside said cabinet, said dispensing subsystems dispensing said articles from said front side, said rear wall having a plurality of openings, each of said openings providing access to a respective one of said supply hoppers, said rear wall also having a plurality of
40 security doors, each of said security doors being associated with a respective one of said openings and being movable between a first position in which said security door covers said opening and a second position in which said security door uncovers said opening, the article dispensing system
45 further comprising locking means for preventing movement of said security doors from their first positions, and means for disabling said locking means of one of said security doors in response to the machine reading of a bar coded label on the supply container of articles to be dispensed by the
50 article dispensing system.

21. A pharmaceutical pill dispensing system comprising a plurality of pill dispensers each operable to store a plurality of pills to be dispensed in a supply hopper and to count and dispense pills from the corresponding supply hopper, computer control means to select one of said dispensers and to
55 operate the selected dispensers to count out and dispense a preselected number of pills, each computer control means maintaining a hopper quantity for each of said dispensers representing the number of pills in the hopper of such
60 dispenser and reducing the hopper quantity of each dispenser by the preselected number counted out by such dispenser when the selected dispenser is caused to count out the preselected number of pills, said computer control means including means to provide an indication to an operator
65 when the hopper quantity of one of said dispensers falls below a predetermined minimum, and means to increase the hopper quantity for each dispenser when pills are added to

the supply hopper of such dispenser by the number of pills added to the supply hopper of a corresponding pill dispenser.

22. An automated pill dispensing system as recited in claim 21, wherein said means to increase said hopper quantity includes a bar code reader to read a bar code on a bulk supply container of pills to be added to the supply hopper of a given pill dispenser. 5

23. A method of dispensing prescriptions employing a plurality of adjacently arranged pill dispensers operable to count out and dispense pills and employing a computer to control the operation of said dispensers comprising the steps of storing a supply of pills of a different pharmaceutical in each said pill dispensers, storing a plurality of prescriptions to be filled in a memory of said computer, said prescriptions each containing the identification of a pharmaceutical pill to be dispensed and a prescribed number of pills, programming said computer to select the pill dispensers storing the pills identified by prescriptions stored in said computer memory, and operating the selected dispensers to simultaneously count out and dispense the prescribed number of pills in response to the prescriptions stored in said memory, receiving the pills counted out by each dispenser into a corresponding upper hopper, releasing the pills from said upper hopper into a corresponding lower hopper when the counting and dispensing by the corresponding dispenser has been completed, positioning vials to receive pills from the lower 10 15 20 25

004220 " 4E 2 51 50

24. A method of dispensing prescriptions as recited in claim 23 further comprising printing a label for each of the prescriptions stored in said memory of said computer, said label containing the prescription information of the prescriptions stored in the memory of said computer, applying the printed labels to prescription vials and filling the labeled prescription vials with the pills counted out and dispensed by said selected dispensers.

26. A method of dispensing prescriptions as recited in claim 23 wherein the pills are released from the lower hoppers into prescription vials one vial at a time.

✱ ✱ ✱ ✱ ✱

SECRET

11/25
28. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling said plurality of pill dispensers to sequentially dispense the pills corresponding to at least one of said plurality of prescriptions.

29. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills corresponding to the plurality of prescriptions.

30. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills, each of the plurality of pill dispensers dispensing a different one of said plurality of prescriptions.

31. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills responsive to a predetermined command or action by the operator.

32. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling at least one of said plurality of pill dispensers to sequentially dispense the pills comprising one of the said plurality of prescriptions at a time.

33. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills comprising one of said plurality of prescriptions at a time.

34. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling said plurality of pill dispensers to sequentially dispense the pills corresponding to at least one of said plurality of prescriptions.

35. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills corresponding to the plurality of prescriptions.

36. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills, each of the plurality of pill dispensers dispensing a different one of said plurality of prescriptions.

37. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been

counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills responsive to a predetermined command or action by the operator.

38. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling at least one of said plurality of pill dispensers to sequentially dispense the pills comprising one of the said plurality of prescriptions at a time.

39. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one of a data processor and a computer responsively connected to said plurality of pill dispensers and including at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been

counted out, and said computer controller controlling each of said plurality of pill dispensers to sequentially dispense the pills comprising one of said plurality of prescriptions at a time.

40. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said controller controlling said plurality of pill dispensers to sequentially dispense the pills corresponding to at least one of said plurality of prescriptions.

41. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to simultaneously count out the pills, said controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said controller controlling each of said plurality of pill dispensers to sequentially dispense the pills corresponding to the plurality of prescriptions.

46. The dispensing system of any of claims 28-45, further comprising a label printing device responsively connected to said controller to print prescription labels corresponding to said plurality of prescriptions, wherein said label printing device prints said prescription labels one at a time and will not produce another prescription label for another prescription until after first pills specified in a preceding prescription have been dispensed from a pill dispenser into a prescription container.

47. The dispensing system of any of claims 28-45, wherein each of said pill dispensers signals the operator to assist in dispensing the pills when ready.

48. The dispensing system of any of claims 28-45, further comprising a plurality of output hoppers one for each of said pill dispensers to receive the pills counted out by said pill dispensers, output snouts, one connected to each of said output hoppers, said controller controlling the selective release of the pills from said output hoppers through the corresponding output snouts, said output snouts being arranged in at least one row and defining an aisle extending adjacent to and parallel to said row to permit the operator to have ease of access to pills dispensed through said snouts.

49. The dispensing system of any of claims 28-45, wherein said plurality of pill dispensers sequentially dispense the pills into a bottle corresponding to one of said plurality of prescriptions.

50. The dispensing system of any of claims 28-45, wherein said plurality of pill dispensers sequentially dispense the pills into a bottle corresponding to at least one of said plurality of prescriptions.

51. The dispensing system of any of claims 28-45, wherein said plurality of pill dispensers sequentially dispense the pills into at least one bottle corresponding to at least one of said plurality of prescriptions.

52. The dispensing system of any of claims 28-45, wherein said controller indicates to the operator when a hopper quantity of at least one of said dispensers requires refilling responsive to predetermined criteria and increases the hopper quantity for the at least one dispenser when the pills are added to a supply hopper of the at least one dispenser by a number of pills.

53. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of said plurality of prescriptions and controlling said plurality of pill dispensers to count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, a plurality of output hoppers one for each of said pill dispensers to receive the pills counted out by said pill dispensers, output snouts, one connected to each of said output hoppers, said controller controlling the selective release of the pills from said output hoppers through the corresponding output snouts, said output snouts being arranged in at least one row and defining an aisle extending adjacent to and parallel to said row to permit the operator to have ease of access to pills dispensed through said snouts.

54. An operator assisted prescription dispensing system comprising a plurality of pill dispensers, each operable to count out pills of at least one pharmaceutical, at least one computer controller responsively controlling said plurality of pill dispensers and storing a plurality of prescriptions each specifying a pharmaceutical in pill form and a number of pills, said computer controller selecting said plurality of pill dispensers dispensing the pills specified in at least one of

said plurality of prescriptions and controlling said plurality of pill dispensers to count out the pills, said computer controller stopping each pill dispenser from counting out the pills when the number of pills specified in the corresponding prescription have been counted out, and said computer controller controlling said plurality of pill dispensers to dispense the pills corresponding to at least one of said plurality of prescriptions.

55. A method of dispensing pills in a prescription dispensing system having a plurality of pill dispensers, comprising the steps of:

controlling the plurality of pill dispensers to simultaneously count out pills responsive to a corresponding plurality of prescriptions; and

controlling the plurality of pill dispensers to sequentially dispense the pills responsive to at least one of a predetermined command and an action by an operator.

DC: #140728 v1 30L401!.WPD 112764-1101

*add
Cb*